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### **EXECUTIVE SUMMARY**

Date Summary Prepared: October 10, 2014

Mine Name: Holliday Block	I.D. Number: M/047/0120
Operator: The Oil Mining Company (TomCo)	Date Original Notice Received: January 10, 2014
Address:	County: Uintah
50 Jermyn Street	New/Existing: New Large Mine Commercial Oil Shale
London SW1Y 6LX	Operation
United Kingdom	
	Mineral Ownership: SITLA
Contact Person: Paul Rankine	Surface Ownership: SITLA
<b>Telephone:</b> 44 (0) 207-766-0078	Lease No.(s): ML-49571

Life of Mine: 19 years

**Legal Description**: The mine is in portions of the following areas: S½ SE¼ of Section 11, S½ S½ of Section 12, all of Section 13, and the E½ of Section 14, Township 12 South, Range 24 East, SLBM.

Mineral(s) to be Mined: Oil Shale

Acres to be Disturbed: 1,082

Present Land Use: Grazing and Wildlife Habitat

Post-mining Land Use: Grazing and Wildlife Habitat

Variances from Reclamation Standards (Rule R647) Granted: None

#### Soils and Geology

**Soil Description**: Three main soil types were identified in the project area. Gompers Big-Pack covers the southern 2/3 of the project area consisting of thin, angular and rocky material found on ridge tops and steep slopes. The Bigpack is a thicker, loamy soil found in valley bottoms and slopes between ridges, found at a lower topographic and stratigraphic position. The Pherson-Hickerson complex is found in the lowest and largest drainage areas on gently sloping concave areas described as deep and loamy. The Walknolls-Bullpen-Walknolls is found along the northern edge of the project area and consists of shallow and channery sandy loams found on hillsides.

**Special Handling Problems**: Plant growth material (PGM) salvaged for the first five years of mine operations is estimated to be 725,500 cubic yards. Up to 900,000 cubic yards will be salvaged by year 11. After year 11, PGM will be taken from the stockpile to be used in reclamation. Little to no additional PGM will be stored after year 11 because it will be used for concurrent reclamation.

**Geology Description**: The mine is located within the Southern Uinta Basin Section of the Colorado Plateau Geologic Province. The Parachute Creek Member, a low permeable shale or dolomitic/calcareous marlstone of the Eocene-aged Green River Formation, outcrops on the Holladay Block site. The Mahogany Zone within the

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Parachute Creek member is the ore-bearing zone for the project. The Parachute Creek member in the area of the mine is at an estimated thickness of 450 feet. The Douglas Creek member, a fluvial deltaic member of the Green River Formation underlies the Parachute Creek Member and is considered the high water yielding regional aquifer.

## **Hydrology**

**Ground Water Description**: Water quality for wells screened within the Parachute Creek formation was poor. Groundwater characteristics included a sulfur smell, petroleum, high turbidity and high total dissolved solids. None of the wells screened in the Parachute Creek member were able to sustain production rates above 1 gallon per minute. One well was drilled into the Douglas Creek member and encountered water at a depth of 920 feet below ground surface and had a production rate of 20 gallons per minute.

**Surface Water Description**: East Seep Canyon Draw is an ephemeral channel that bisects the northern third of the project area and flows only in response to storm events. East Seep Canyon is tributary to Long Draw, which is tributary to Center Fork Asphalt Wash, which is tributary to Asphalt Wash, which is tributary to the White River, which is tributary to the Green River.

Water Monitoring Plan: A Groundwater Discharge Permit is anticipated to be issued by the Utah Division of Water Quality. Water monitoring requirements will likely be outlined in this permit.

### **Ecology**

Vegetation Type(s); Dominant Species: Mixed sagebrush/greasewood shrub land within low elevation valleys; pinyon-juniper woodland/shrub land along hillside slopes. Field surveys indicate that Graham's beardtongue, a rare plant species, is in the project area. The U.S. Fish and Wildlife Service initially proposed to list the plant as endangered but have withdrawn the listing based on a Conservation Agreement between several state and federal government agencies and Uintah County.

TomCo has committed to selectively salvaging and separately stockpiling 40-acres of Gompers-Bigpack soil supportive of the Graham's beardtongue plant at depths of 3 to 8 inches resulting in 29,550 cubic yards of growth media stored for Graham's beardtongue-specific reclamation. TomCo also commits to performing reclamation trials to successfully transport individual plants, or to grow Graham's Beardstongue from seed.

**Percent Surrounding Vegetative Cover**: Vegetation cover averages 36 percent and ranges from 18 to 52 percent.

Wildlife Concerns: A total of 10 wildlife species on the Utah Division of Wildlife Resources Species of Concern or Candidate Species list were identified as having the potential to occur in the project area. Some raptors were noted flying over the project area during a 2013 survey. No evidence of nests were noted. No evidence of greater sage-grouse, white tailed prairie dog or other sensitive or listed animal species were noted.

TomCo commits to conducting a raptor nesting survey one year prior to commencing ground disturbing activities in accordance with the protocol outlined in pg. 48 of their mine plan. Active nests will be avoided within a ¼ to 1 mile buffer. Nests not in use by a raptor identified outside of nesting season located within a ½ mile buffer of the project area will be removed between September and January.

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**Surface Facilities**: Surface facilities will include diversion channels water retention ponds, office and warehouse buildings, generators, fuel tanks, flare stacks, a potable water tank, and a laydown/storage area. Structures in the mining areas will include capsules, haul and ancillary roads, soil stockpile areas, and equipment, such as flare stacks and compressors.

# **Mining and Reclamation Plan Summary**:

**During Operations**: Mining will affect approximately 665 acres during the first five years of operation. All stripping of growth media will occur one year prior to mining disturbance. The stockpiled growth media will be placed in the northern portion of the project area. TomCo commits to seeding the stockpile at the first appropriate opportunity and each fall as additional growth media is added to the stockpile. Overburden depths in the project area range from 10 feet to 140 feet. Ore and intraburden layers will be drilled and blasted. The material will then be blended together, crushed to the appropriate size and hauled into capsules constructed of bentonite amended soil (BAS), an eight-foot thick crushed gravel layer, and a steel liquid collection pan and piping. A piping system installed within the stacked ore will heat the rock to a specified temperature to collect liquids liberated from the oil shale rock. The ore is then covered by an additional 15-17 feet of gravel insulation followed by 3 feet of BAS. Capsule dimensions are approximately 500 feet x 900 feet. The final product, kerogen, will be stored in tanks and ready for off-site shipping to the market.

The sequence of mining will involve an open pit excavated in the southeast corner of the project area. During the first five years of mining, 21 capsules will be constructed "out of pit" in the west project area. Beginning in year five, capsules will be constructed in the mined out pit area and will progress in an east to west manner. Capsules will be stacked in a "two-tier" system. A second set of capsules will be constructed directly above the first set of capsules once the first tier has cooled. A total of 126 capsules are estimated for construction during the life of mine. The sequence and rate of capsule construction is designed to produce and sustain a target production rate of 9,800 barrels of oil per day.

No groundwater is used in the production of kerogen. Net water use at the mine is estimated to be 0.3 barrels of water per barrel of oil produced. Water is needed to meet on-site worker demand, dust control and production of the BAS. A water right will be secured by TomCo from the Uintah Water Conservancy. A groundwater discharge permit for the Holliday Block mine is scheduled to be issued by the Utah Division of Water Quality.

#### **After Operations:**

Once all capsules have cooled and settled completely, all but 21 of the 126 proposed capsules will be designed to be left on-site in perpetuity. Regrading and final reclamation will take place at that time. Pit highwall and end wall slopes will be regraded to a 1H:1V slope. Capsule highwall slopes will be stabilized and regraded to achieve a 1.5H:1V slope to ensure positive drainage off the capsules. No mine dumps will be left on-site as all material is used in the capsule construction process. All surface water from upland sources will be diverted around the disturbance areas. A reclamation drainage management plan was submitted in the mine plan. Plant growth media will cover the disturbed areas with an average of 8.4 inches of soil and seeded with a mix that includes both native and introduced species adapted to the region. Reclaimed areas will need to meet a standard of 25.2% vegetative cover. All facilities will be removed at reclamation. If requested by the property owner, SITLA, TomCo will leave existing water wells, associated roads or pipeline.

The project will be designed to control emissions as a minor source not requiring an air quality permit. A fugitive dust control plan will be prepared, and emissions will be controlled by watering roads.

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# Surety

Amount: \$6,115,000
Form: Not Determined
Renewable Term: 5 years